Teleton

SERVICE MANUAL

Model TW—12EU, Model TK—14EU

TW—12EU TELEVISION RECEIVER
75 SQUARE INCH PICTURE
(12 inch Picture measured diagonally)

TK—14EU TELEVISION RECEIVER
82 SQUARE INCH PICTURE
(14 inch Picture measured diagonally)

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SPECIFICATIONS

Frequency Range (CCIR Standard)	:	VHF Channels ---------- 2 – 12 Channel UHF Channels ---------- 21 – 70 Channel
Intermediate Frequencies	:	Picture I.F. Carrier ---------- 38.9 MHz Sound I.F. Carrier ---------- 33.4 MHz
Power Input &	:	AC 220 V (200 V – 240 V Regulated), 50 Hz, 26 W
Power Rating	:	DC 12 V, 12 W
Audio Power Output	:	0.7 W (maximum)
Sweep Deflection	:	Magnetic
Focus	:	Electrostatic
Antenna Input Impedance	:	300 ohm balanced
Picture Tube	:	TW-12EU ----- 310EUB4 (12″, 90° deflection implosion protect type) TK-14EU ------ 340ZB4 (14″, 90° deflection implosion protect type)
Semiconductors	:	Transistors ---------- 32 pcs. Diodes ---------- 18 pcs. Thermistors --------- 2 pcs.

Semi-conductor Complement :

2SC1070 ---------- UHF Amplifier	2SC372 ---------- AFC Amplifier
2SC684 ---------- UHF Oscillator (A1E) (2SC387)	1N60 ---------- Horizontal Switching Diode
1N82G ---------- UHF Mixer (1S750) (SD82A)	2SB56 ---------- Horizontal Oscillator
2SC606 ---------- VHF Amplifier	2SC735 ---------- Deflection Protector
2SC287A --------- VHF Oscillator	2SC735 ---------- Horizontal Driver
2SC605 ---------- VHF Mixer	2SC558 ---------- Horizontal Deflection
2SC382G --------- 1st Picture I.F. Amplifier	1S689 ---------- Damper Diode
2SC388A --------- 2nd Picture I.F. Amplifier	1S1224 ---------- Medium Voltage Rectifier
2SC388A --------- 3rd Picture I.F. Amplifier	HS20/1 ---------- High Voltage Rectifier
1N60 ---------- Video Detector	2SC372 ---------- Horizontal & Vertical Blanking
2SC373 ---------- Video Amplifier	10D-2 × 5 ------ Power Rectifier × 4 and Audio Separate
2SC983 ---------- Video Output	2SA473 ---------- Power Regulator Out
2SB56 × 2 ------ AGC Keyed & Delayed	TD5-C220 ------ + B Compensating Thermistor
1N60 ---------- AGC Unidirection Diode	2SC735 ---------- Power Regulator Amplifier
2SC372 ---------- 1st Sound I.F. Amplifier	2SC372 ---------- Power Regulator Detector
2SC380ATV ---- 2nd Sound I.F. Amplifier	2SC735 ---------- Vertical Oscillator
1N60 × 2 -------- Sound Detector	2SA609 ---------- Vertical Miller Integral
2SC372 ---------- Audio Amplifier	1S1555 ---------- Vertical Unidirection Diode
2SB56 ---------- Audio Driver	1S1555 ---------- Vertical Forward Bias Diode
2SD30 ---------- Audio Output	2SC735 ------- Vertical Driver
2SB22 ---------- Audio Output	TD8-A010 ------ Vertical Bias Compensating Thermistor
2SA609 ---------- Sync. Clipper	2SC496 ---------- Vertical Deflection
1N60 × 2 ------- AFC Phase Detector	2SB415 ---------- Vertical Deflection

Speaker	:	TW-12EU ----- 29 cm × 7 cm Oval P.M. TK-14EU ----- 12 cm × 8 cm Oval P.M.
Cabinet Dimensions	:	TW-12EU ----- 29 cm (H) × 38 cm (W) × 31 cm (D) TK-14EU ----- 30 cm (H) × 40.5 cm (W) × 32.5 cm (D)
Weight (Approx.)	:	TW-12EU ----- 7 kg (Net) TK-14EU ----- 8 kg (Net)

GENERAL DESCRIPTIONS

Model TW-12EU & TK-14EU are Solid State portable television receiver designed for 61 channels UHF/VHF operation. These set will be operate AC 220 volts or DC 12 volts.

Model TW-12EU

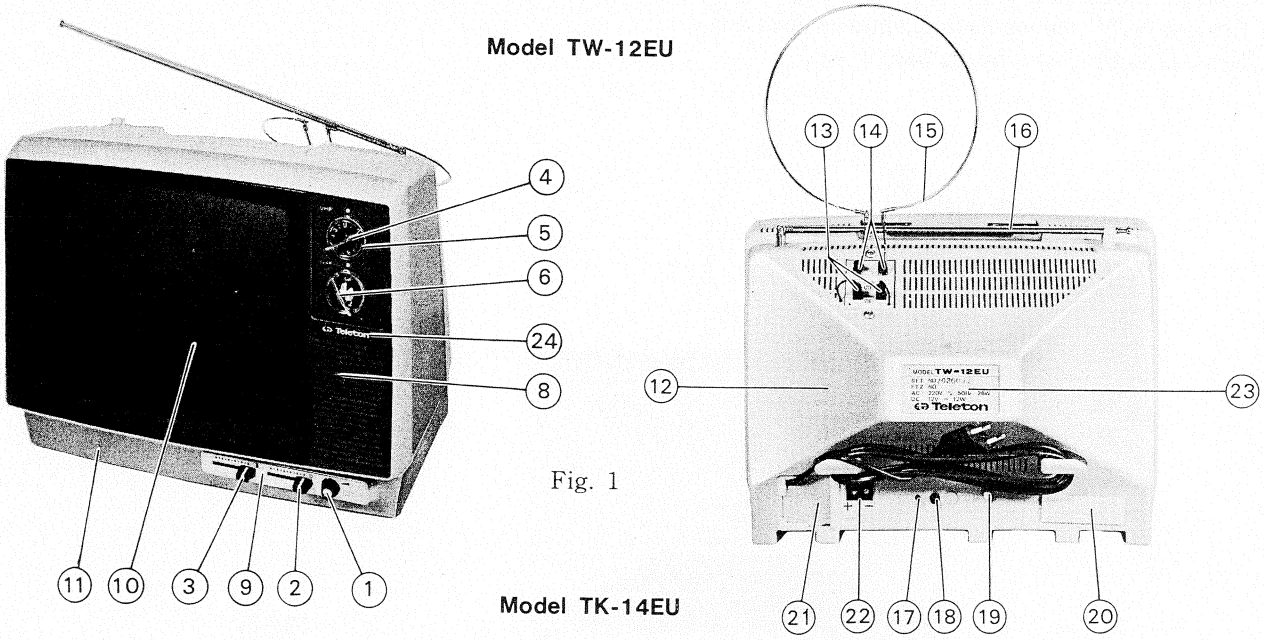


Fig. 1

Model TK-14EU

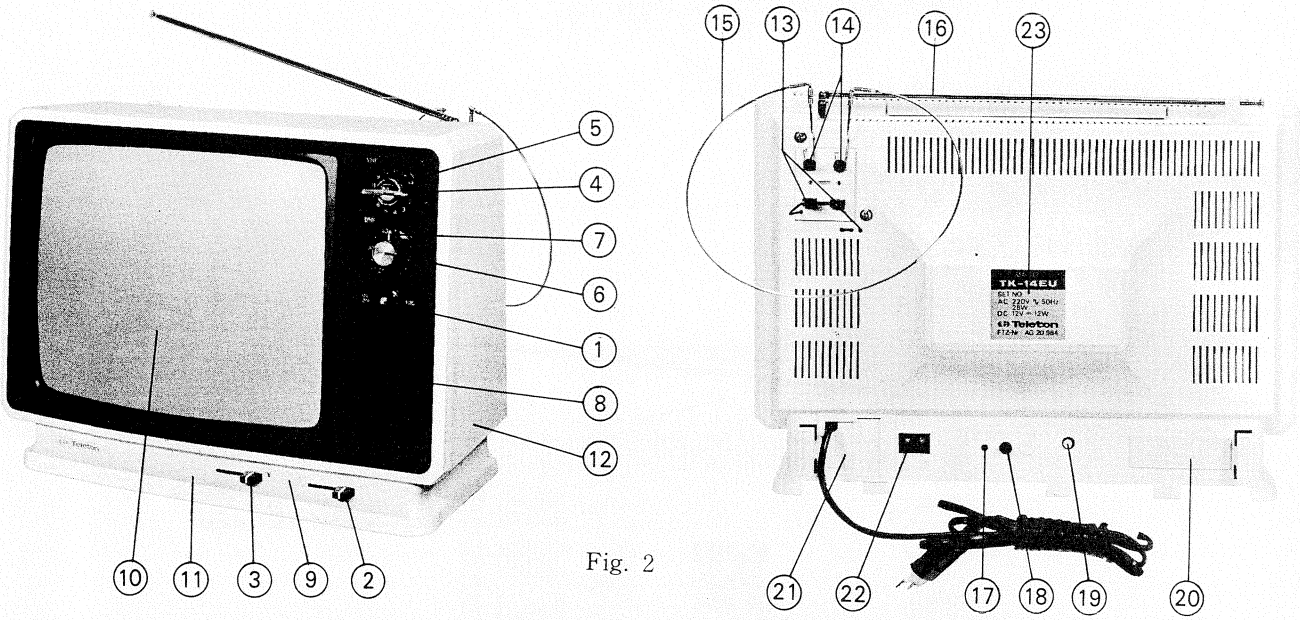


Fig. 2

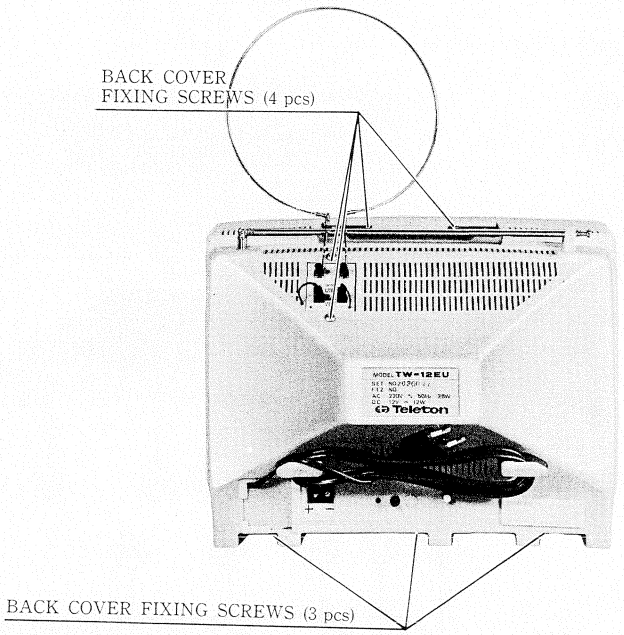
① MAINS PULL-ON SWITCH & VOLUME CONTROL (KNOB E342/E333)
② BRIGHTNESS CONTROL (KNOB S9/S4)
③ CONTRAST CONTROL (KNOB S9/S4)
④ VHF CHANNEL SELECTOR (KNOB C377/C357)
⑤ VHF FINE TUNING CONTROL (KNOB F212/F210)
⑥ UHF CHANNEL SELECTOR (KNOB C363/C358)
⑦ UHF CHANNEL INDICATOR: TK (TK-14EU only)
⑧ DECORATION BOARD: (TWU/TK)
⑨ DECORATION BOARD: (TWBS/TKBS)
⑩ SUN-SHIELD: (TW/TK)
⑪ BEZEL: (TWBS/TKBS)
⑫ BACK COVER: (TW/TKBS)
⑬ VHF ANTENNA TERMINAL
⑭ UHF ANTENNA TERMINAL
⑮ UHF LOOP ANTENNA: PFAUB
⑯ VHF TELESCOPIC ANTENNA
⑰ VERTICAL SIZE (HEIGHT) ADJUSTMENT
⑱ VERTICAL HOLD CONTROL
⑲ HORIZONTAL HOLD CONTROL
⑳ CAUTION PLATE FOR BACK COVER: TWBS
㉑ HOLE PROTECTOR FOR SUPPLY CORD: (TWEU/TKEU)
㉒ DC CONNECTOR SOCKET
㉓ NAME PLATE: (TWEU/TKEU)
㉔ BADGE: TWBS (TW-12EU only)

REMARK: TW-12EU/TK-14EU

DISASSEMBLY INSTRUCTIONS

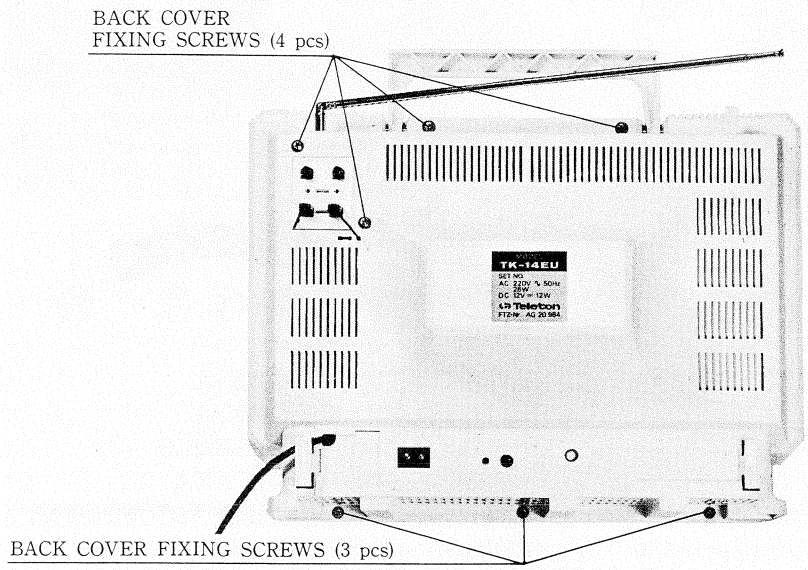
BACK COVER

a) Remove seven screws as shown in Fig. 3 (TW-12EU) and Fig. 4 (TK-14EU).
b) Remove VHF monopole rod antenna lead tip.
c) Remove back cover by pulling it out.



Model TW-12EU

Fig. 3



Model TK-14EU

Fig. 4

CHASSIS REMOVAL

Model TW-12EU

a) Remove all knobs from the front of the cabinet.
b) Remove solder connections to chassis ground and speaker leads.
c) Remove C.R.T. socket, deflection yoke and 2nd. anode cap (when disconnecting 2nd. anode, discharge it to chassis ground only).
d) Remove four screws holding the tuner as shown in Fig. 5.
e) Remove two screws holding the printed circuit board frame and tuner bracket slowly backwards as shown in Fig. 6.

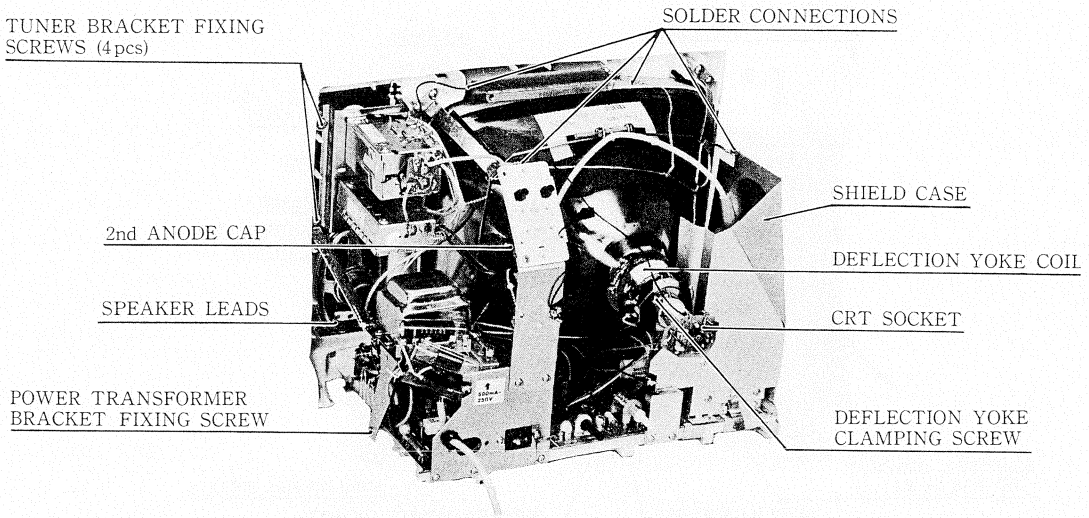


Fig. 5

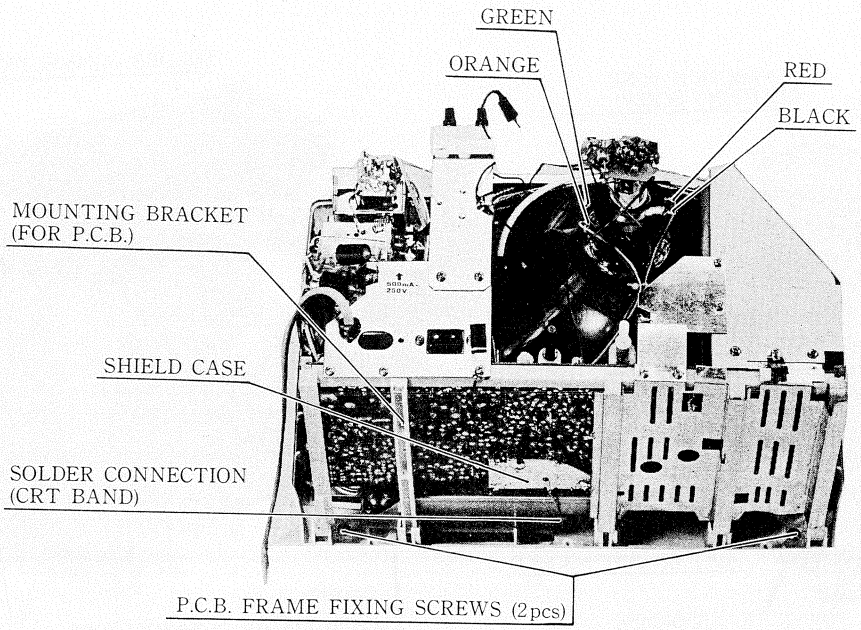


Fig. 6

CHASSIS REMOVAL

Model TK-14EU

a) Remove all knobs from the front of the cabinet.

b) Remove solder connections to chassis ground and speaker leads. (See Fig. 7, 8)

c) Remove C.R.T. socket, deflection yoke and 2nd. anode cap (when disconnecting 2nd. anode, discharge it to chassis ground).

d) Cut the clamper supporting input cable of VHF tuner.

e) Remove four screws holding the tuner. (See Fig. 7)

f) Remove two screws holding the shield case (TK-EU1, 2), one screw holding power transf. bracket, and pull tuner bracket slowly. (See Fig. 7, 8)

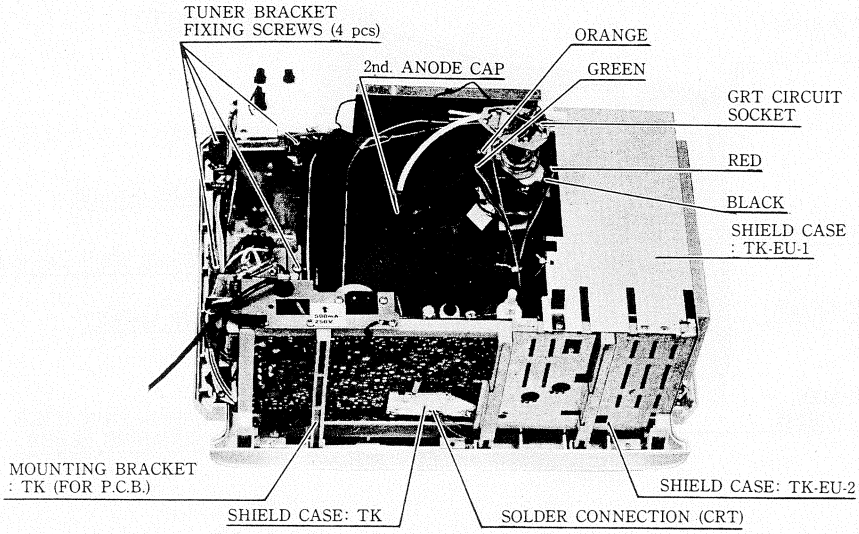
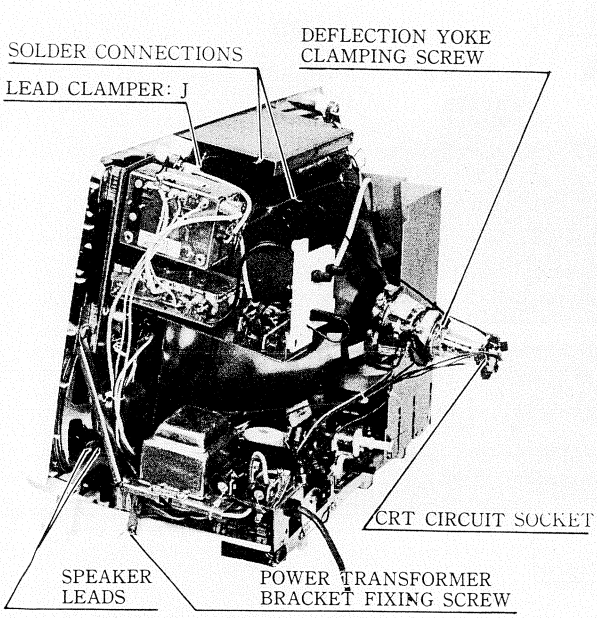


Fig. 7



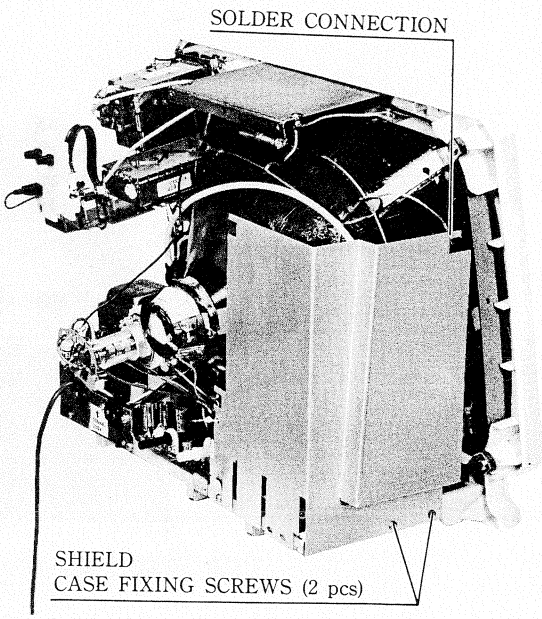


Fig. 8

PICTURE TUBE REMOVAL

a) Remove chassis.
b) Remove solder connection to chassis ground.
c) Remove C.R.T. Bracket fixing Screws and tube retaining wire frame.
d) Remove C.R.T. (See Fig. 9 & 10).

SPEAKER REMOVAL

Remove four screws holding speaker to cabinet (See Fig. 9 & 10).

Model TW-12EU

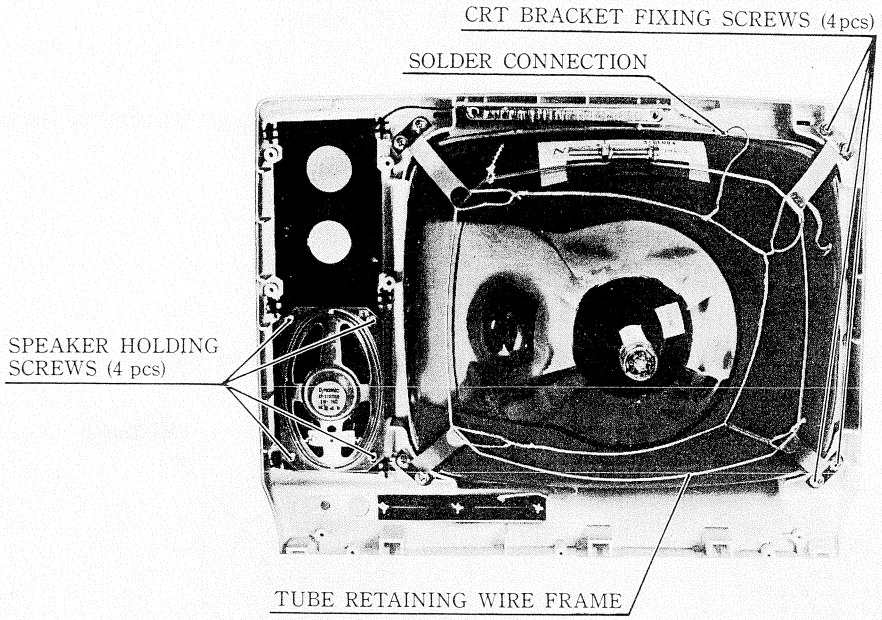


Fig. 9

Model TK-14EU

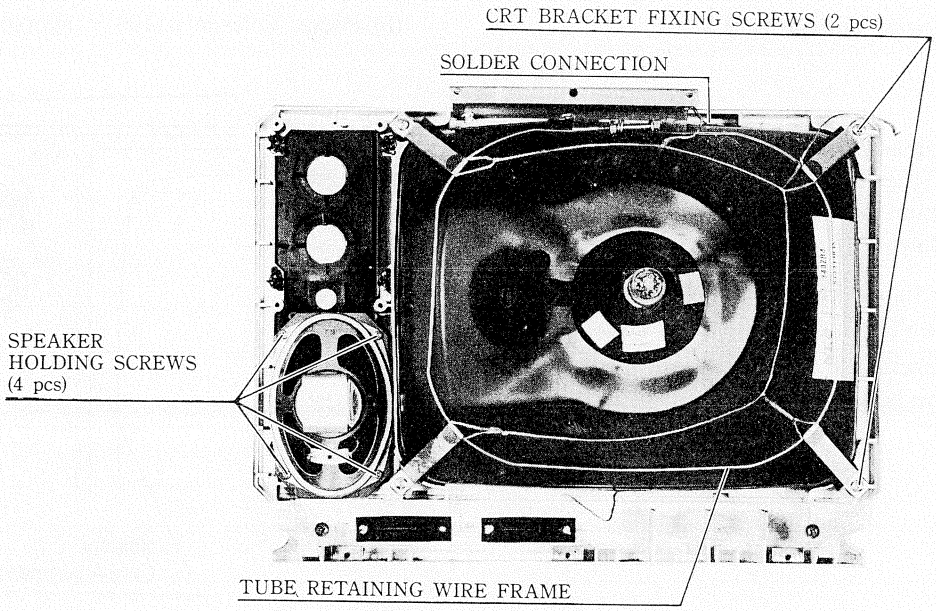
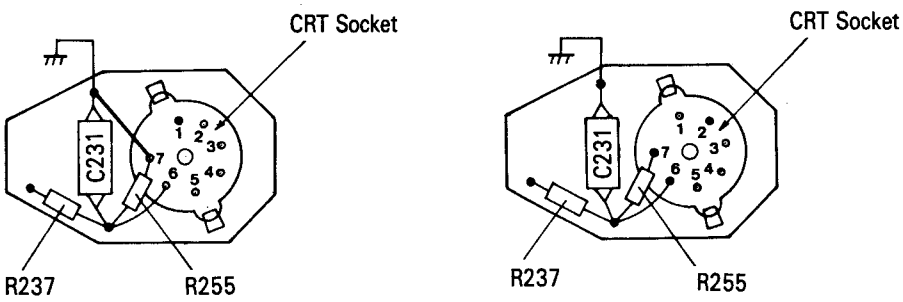


Fig. 10

To reassemble, reverse the above procedure.

SERVICE ADJUSTMENTS

1. When servicing, make sure that the AC power line voltage does not exceed 10% more than rating voltage.
2. Make sure that the DC voltage between collector of TR601 and chassis is 12.0 ± 0.2 volts, if not, adjust the power +B adjust control R609 correctly (See Fig. 22).
3. Read carefully the following notes so as not to damage any transistor by over-loading.
   1) When the power is on, never attempt to short or open any portion of the circuit.
   2) Do not discharge or arc when checking high voltage.
   3) When replacing parts in the receiver, make sure the power supply cord should be disconnected.
4. Adjustment.
   1) Deflection Yoke (Position and angle)
      a) Loosen the clamp screw of Yoke.
      b) Push the Yoke tightly as close as possible to the CRT front glass.
      c) Adjust the horizontal tilting observing the picture on the CRT screen.
      d) Refasten the clamp screw.
   2) Centering
      Adjust the 2 centering magnets (on back side of the Yoke), and get the proper position of the picture on the CRT screen.
   3) Horizontal Hold
      Set the Horizontal oscillator coil L401 to the center of its range.
   4) Vertical Size
      Adjust the Vertical size until the proper picture is obtained.
   5) Focus
      Choose a connection pattern of focus voltage among the 2 patterns shown in Fig. 11.



(a) Focus Voltage is 0 V. (b) Focus Voltage is 100 V approx.

Fig. 11

   6) VHF Tuner Adjustment
      If the range of the VHF fine tuning control is not sufficient for tuning in a clear picture on one or more channels, the oscillator coil core requires adjustment.
      a) Set the fine tuning control to the center of its range.
      b) Remove the VHF channel knob and Fine Tuning knob.
      c) Adjust the oscillator coil core carefully with a non-metallic aligner to obtain the best picture and sound (See Fig. 12).

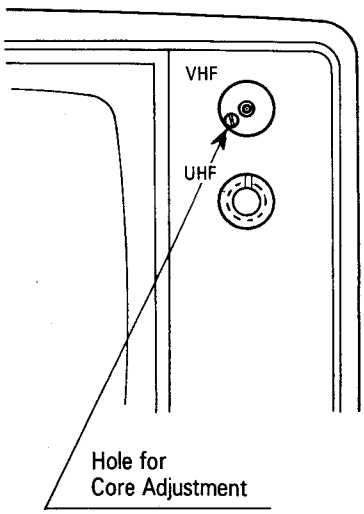


Fig. 12

ALIGNMENT PROCEDURE

VIDEO IF ADJUSTMENT

1) Measuring Equipments
   Sweep Generator, 35 MHz band with Marker
   Oscilloscope
   Variable resistor, 250 Kohm
   DC 12 volts power supply
   VTVM
   VHF SG
2) Alignment
   a) Connect the measuring equipment to the Set as shown in Fig. 13.

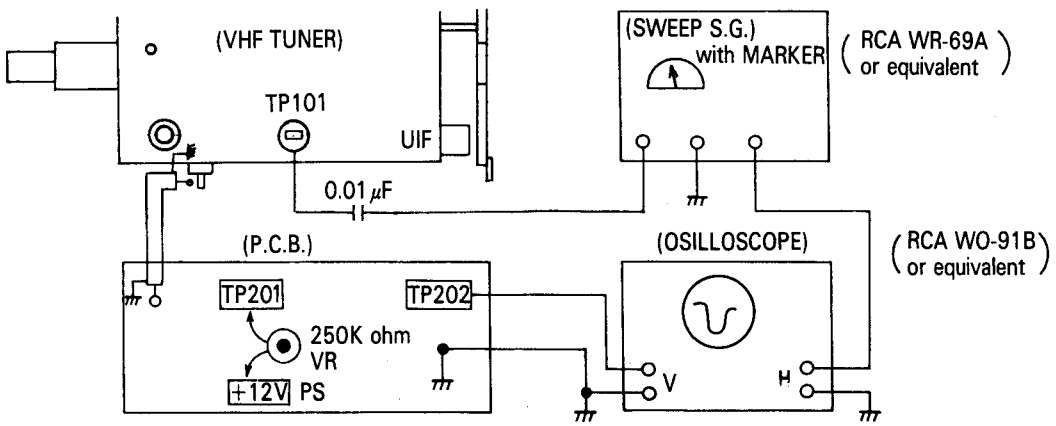


Fig. 13

   b) Rotate the 250 Kohm variable resistor to fully clockwise.
   c) Turn channel selector to non-active channel.
   d) Tune the picture IF Transformers and coils as shown in the following table (except L204), with modulated marker signal by 400 or 1000 Hz at no sweep signal.

Adjust L201 for minimum output for a 40.4 MHz point from VHF SG. Repeat adjustment for each coil/transf. using proper point frequency.

TABLE

Alignment Procedure	1	2	3	4	5	6
Parts to be aligned	L201	L203	T201	T202	L202	T101
Frequency (MHz)	40.4	33.4	38.5	36.5	35	36.5
Amplitude on Oscilloscope	Min.	Min.	Max.	Max.	Max.	Max.

   e) Put the sweep generator in operation and modulation signal of maker generator in suspension.
   f) Adjust the output level of sweep generator until pattern as shown in Fig. 13 is fully scanned on the oscilloscope screen (Oscilloscope sensitivity is approx. 0.3 V/1 cm).

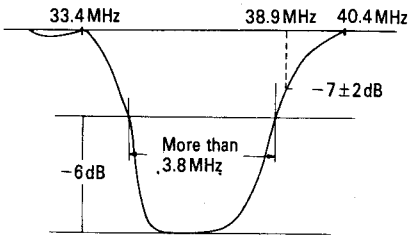


Fig. 14

g) Increase the sweep signal level to five times, and again adjust 250 Kohm variable resistor connected until full scanning is obtained. If waveform is not satisfactory, adjust T201, VIF transformer T202 and Tuner output transformer T101 until a satisfactory result is obtained.

h) Observe the trap position and readjust it if necessary.

+B SUPPLY ADJUSTMENT

1) Connect AC plug to the AC line not exceeding ± 10% of the rating voltage.
2) Connect voltmeter to TR601 collector, then adjust R609 (5 Kohm VR) so that indication becomes 12.0 V ± 0.2 V.

SOUND IF CIRCUIT

1) Connect measuring equipment to the set as shown in Fig. 17.
2) Set 5.5 MHz signal level to about 55 dB and connect the Vacuum Tube Voltmeter to TP301 as shown in Fig. 14 through dividing network (See Fig. 15).

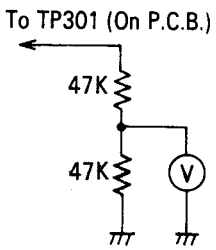


Fig. 15

(Alignment Pink colored core of T301 and L209)

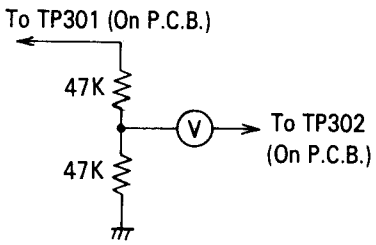


Fig. 16

(Alignment Blue colored core of T301)

3) Tune the Ratio Detector's (T301) Orange colored core for maximum indication.
4) Connect the Vacuum Tube Voltmeter between TP301 and TP302 as shown in Fig. 16 through dividing network as TP301 side.
5) Set 5.5 MHz signal level to about 100 dB.
6) Tune Ratio detector (T301) Green colored core for zero volt.

Note: The above adjustment should be repeated two or three times to avoid mis-tuning.

5.5 MHz TRAP

Adjust 5.5 MHz Trap L209 so that signal voltage at "K" pin in PCB for CRT cathode becomes minimum, setting signal generator output to 100 − 120 dB under the condition of maximum contrast (See Fig. 17).

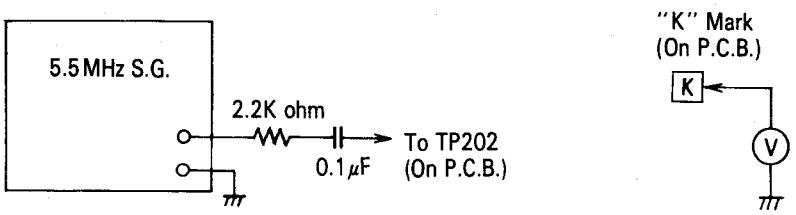


Fig. 17

CHASSIS VIEW

Model TW-12EU

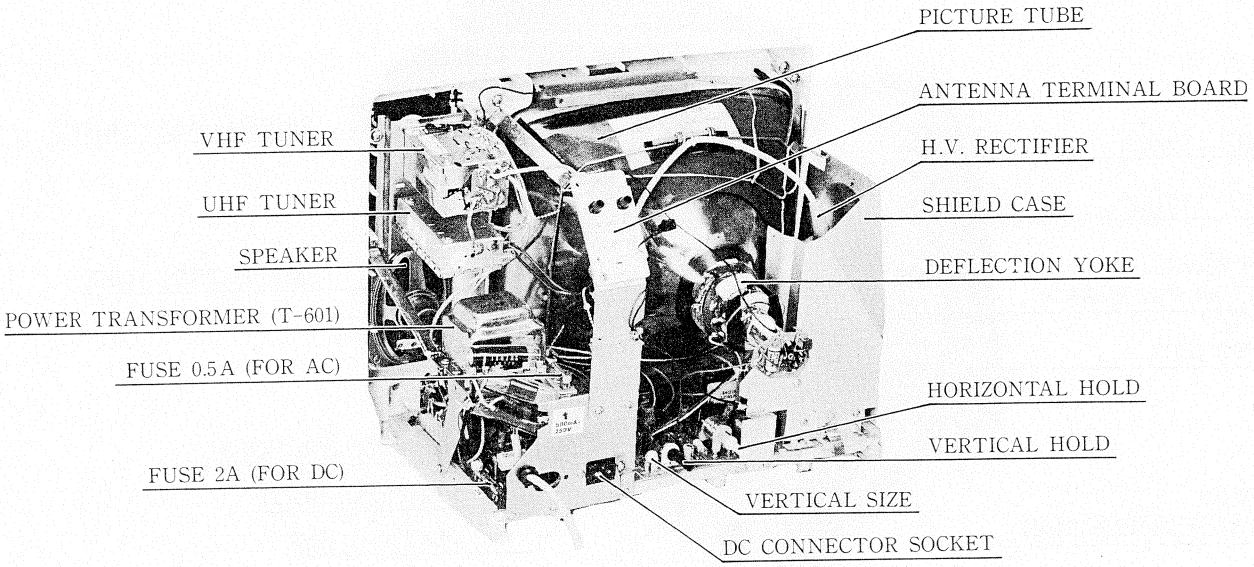


Fig. 18

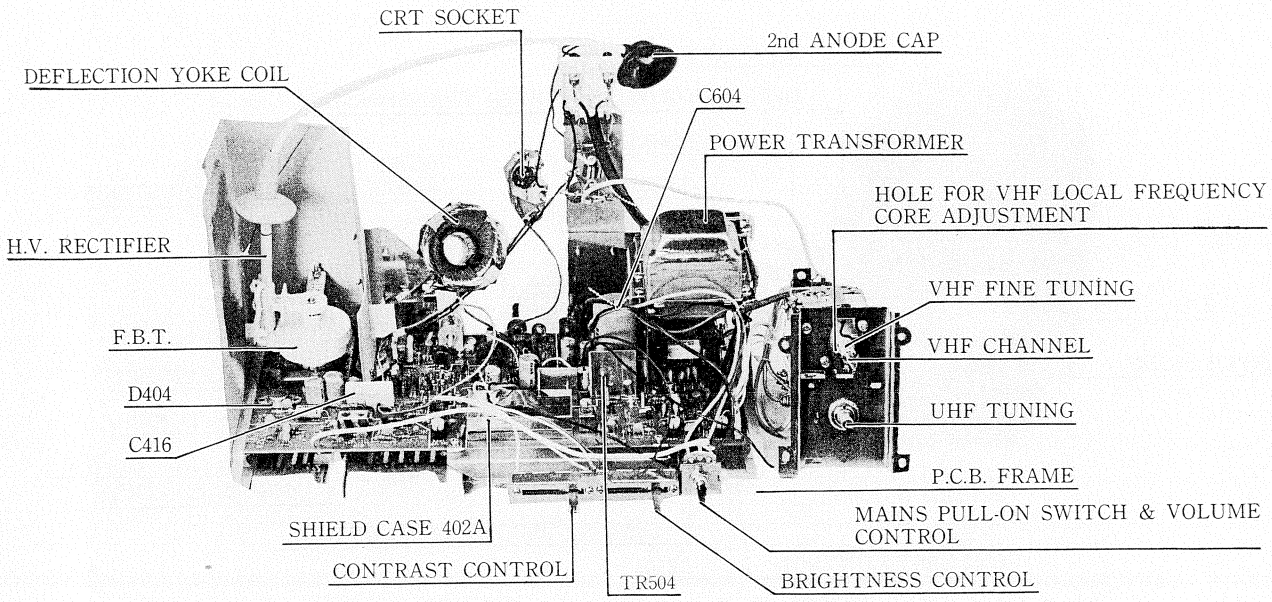


Fig. 19

CHASSIS VIEW

Model TK-14EU

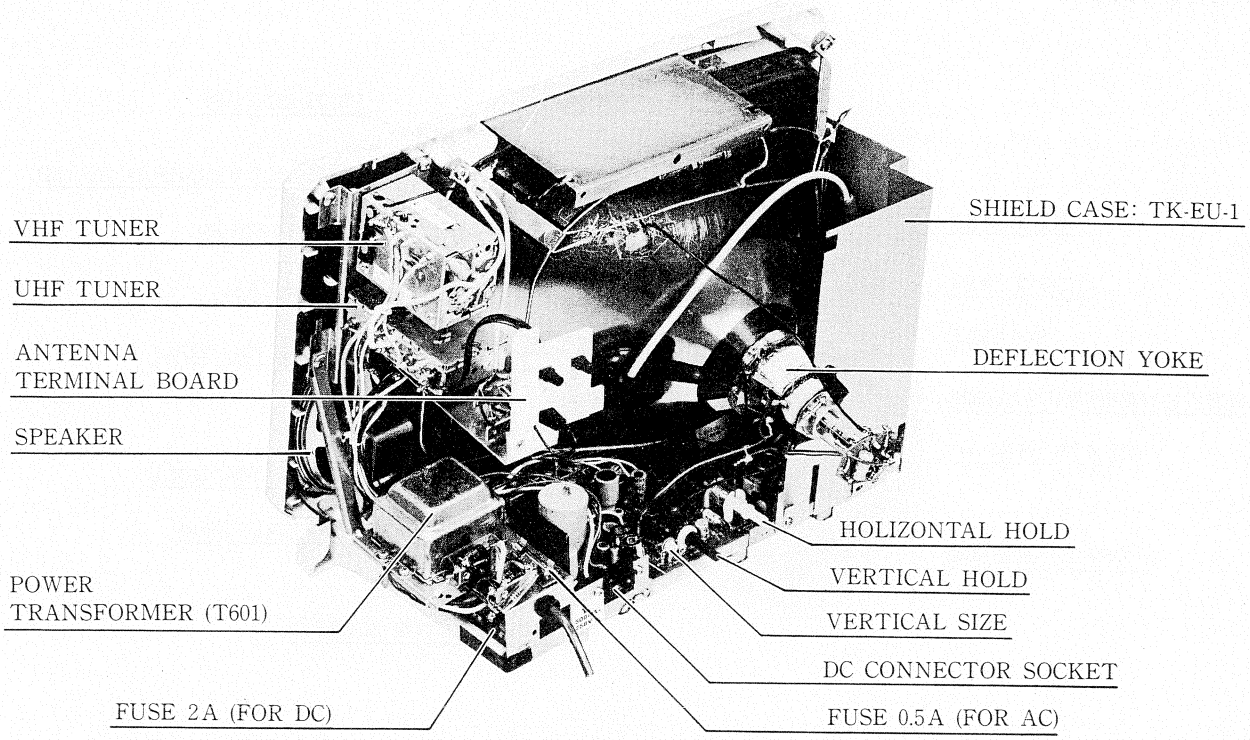


Fig. 20

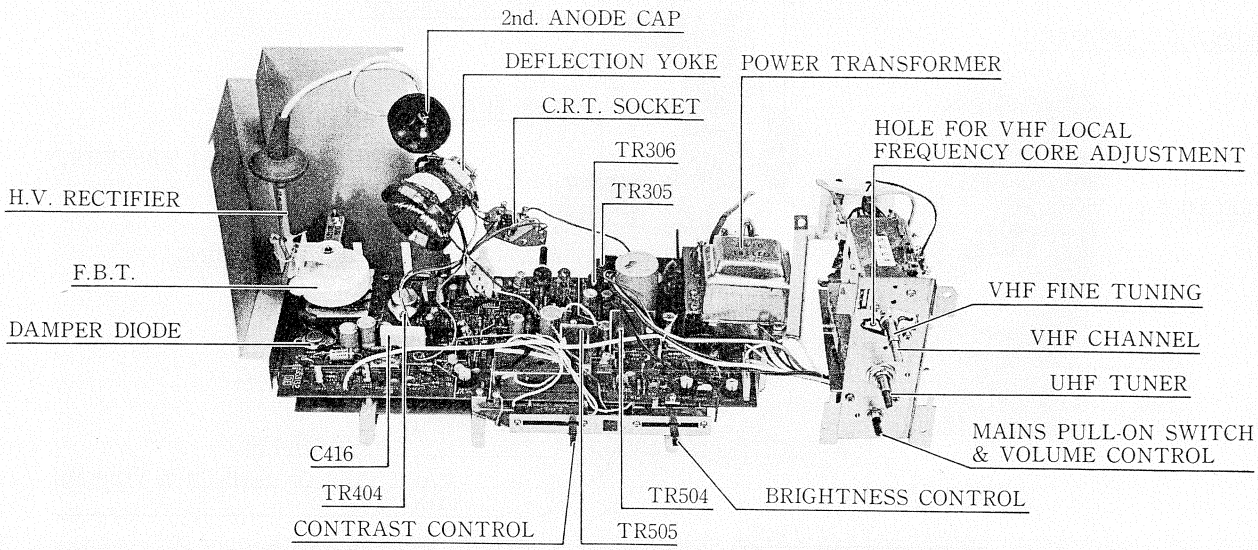


Fig. 21

PRINTED CIRCUIT BOARD ASSEMBLY (Top View)

TW-12EU, TK-14EU

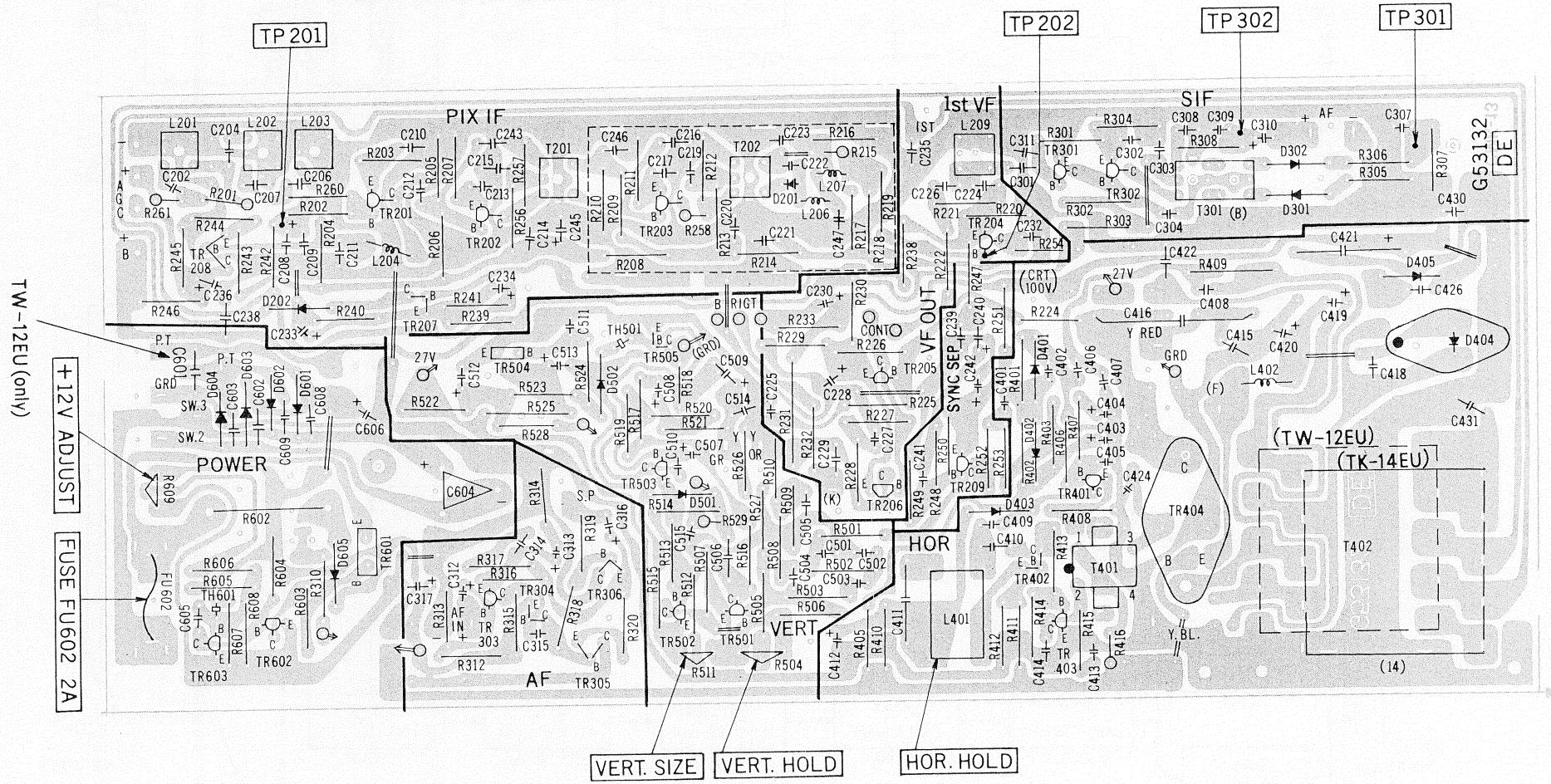
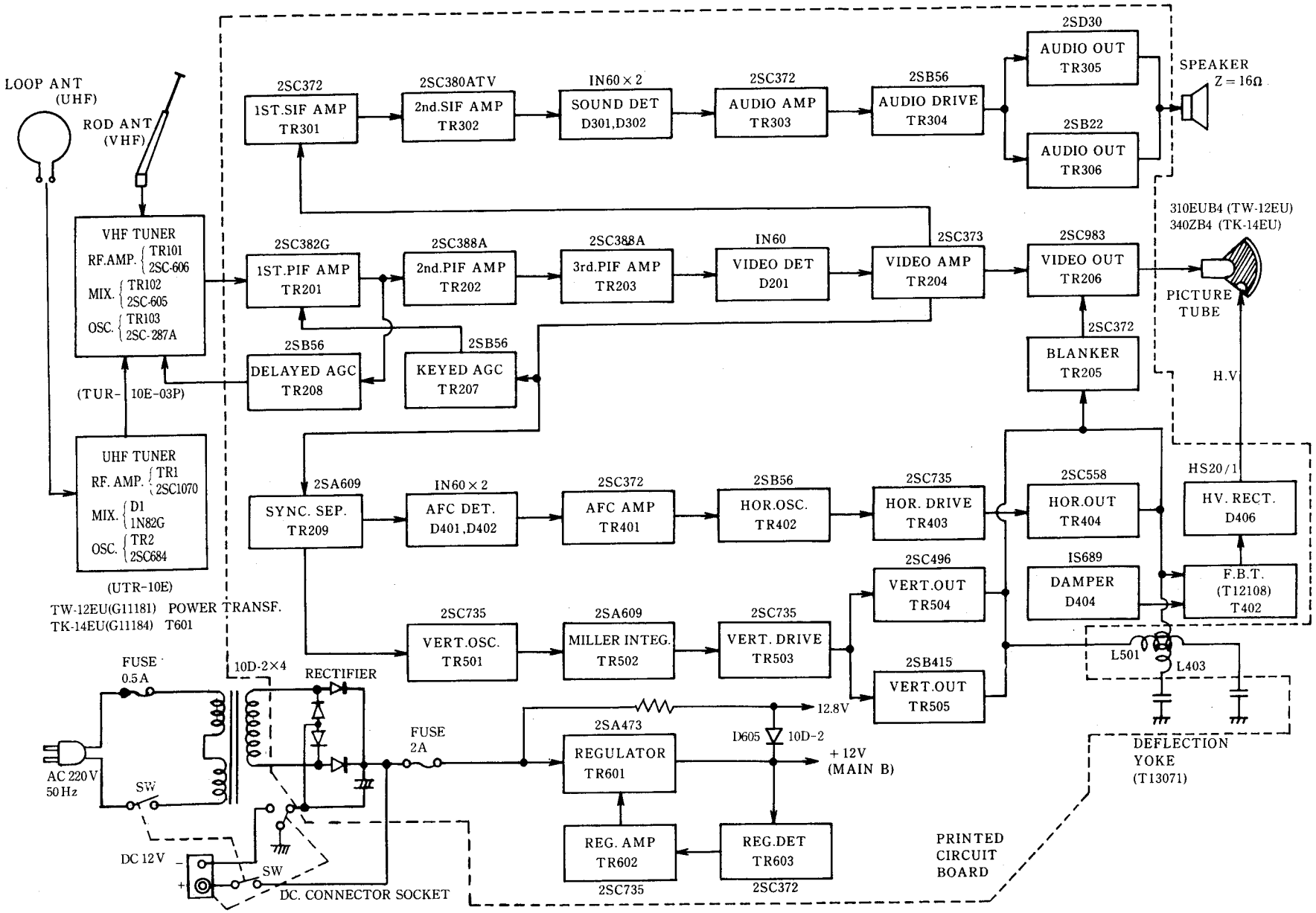


Fig. 22

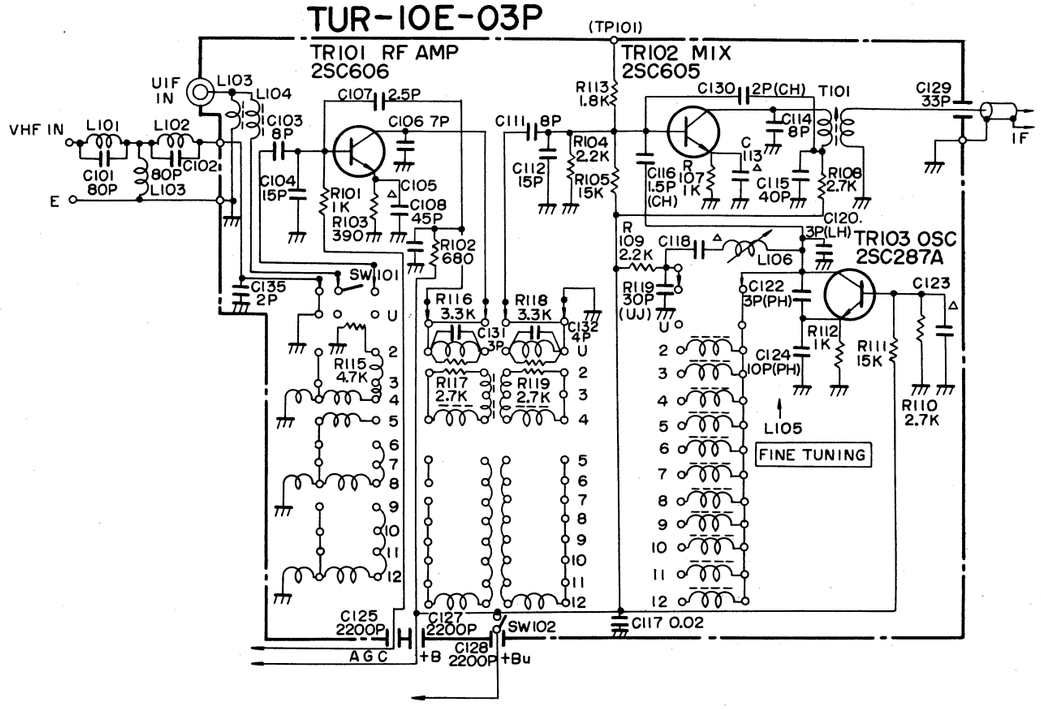
BLOCK DIAGRAM

TW-12EU, TK-14EU



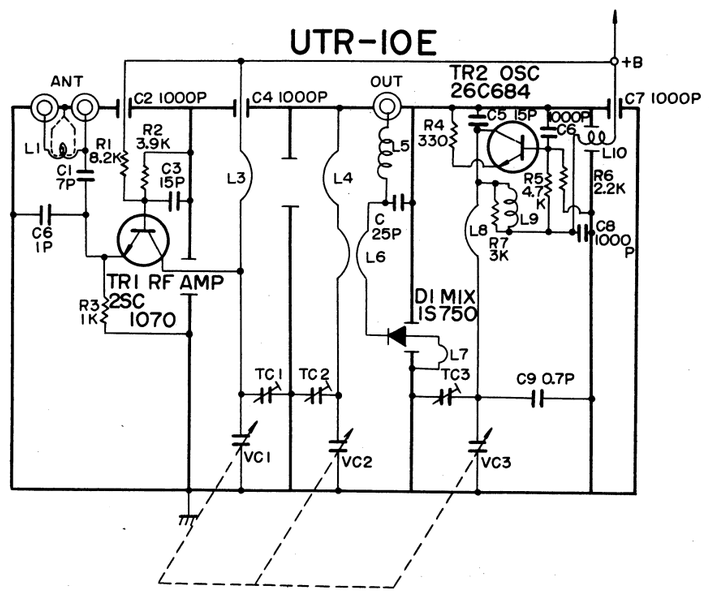
VHF TUNER

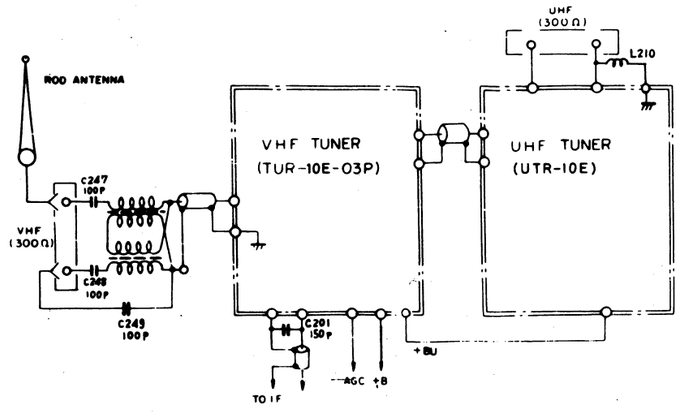
TUR-10E-03P

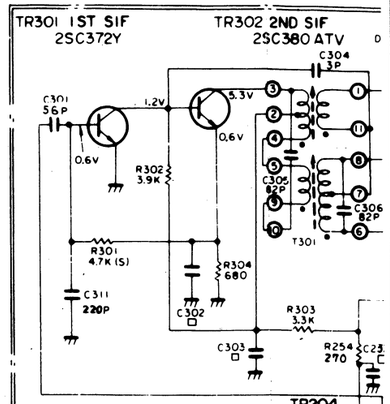


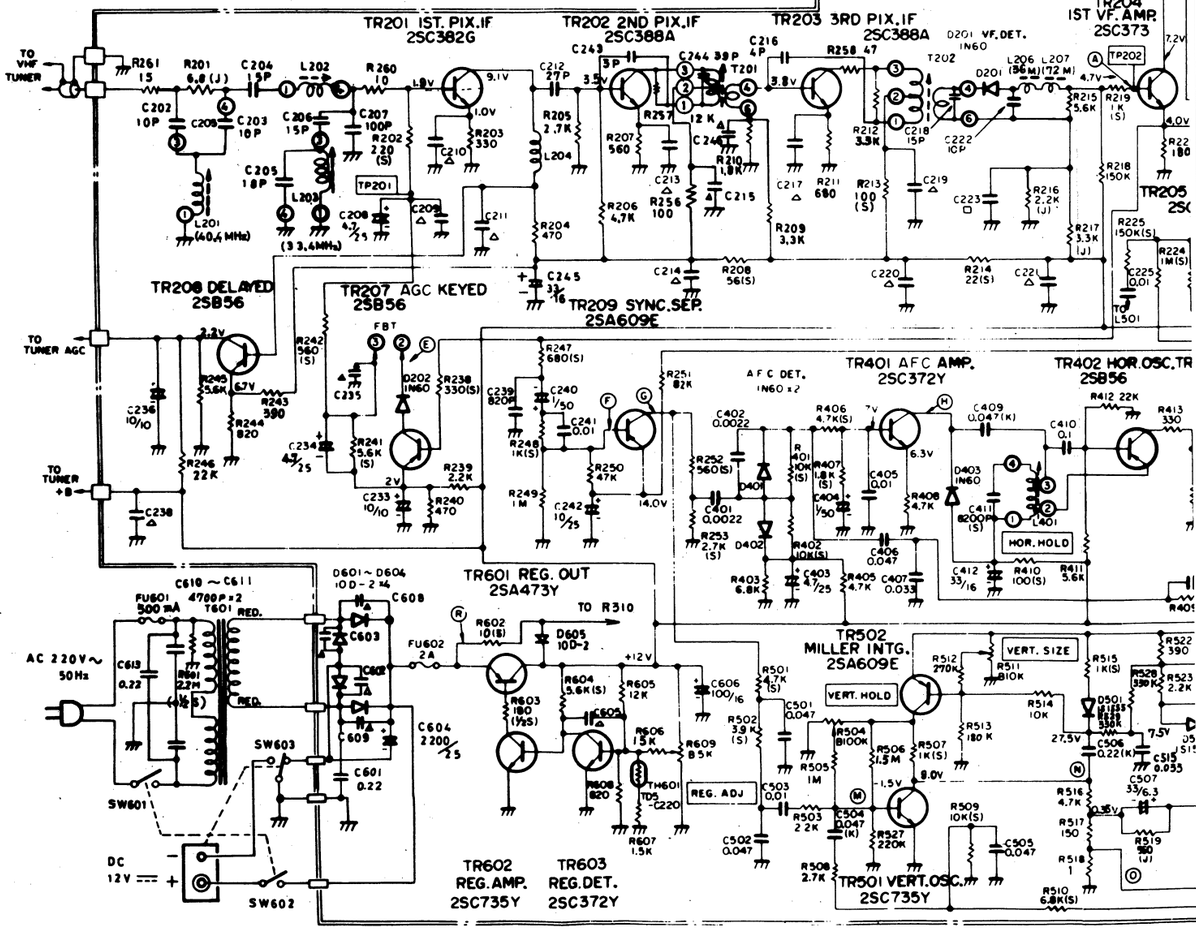
UHF TUNER

UTR-10E



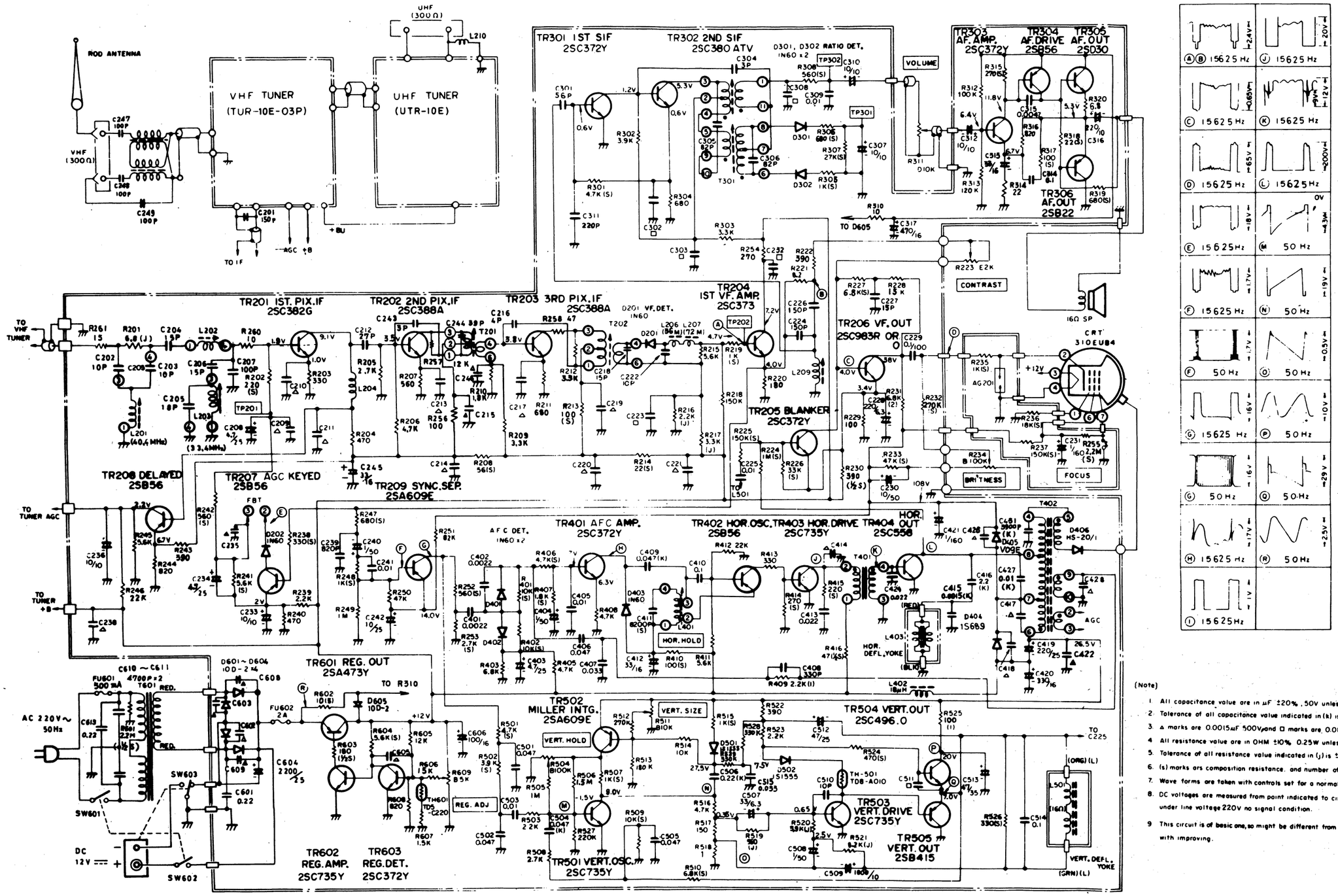






CIRCUIT DIAGRAM

TW-12EU

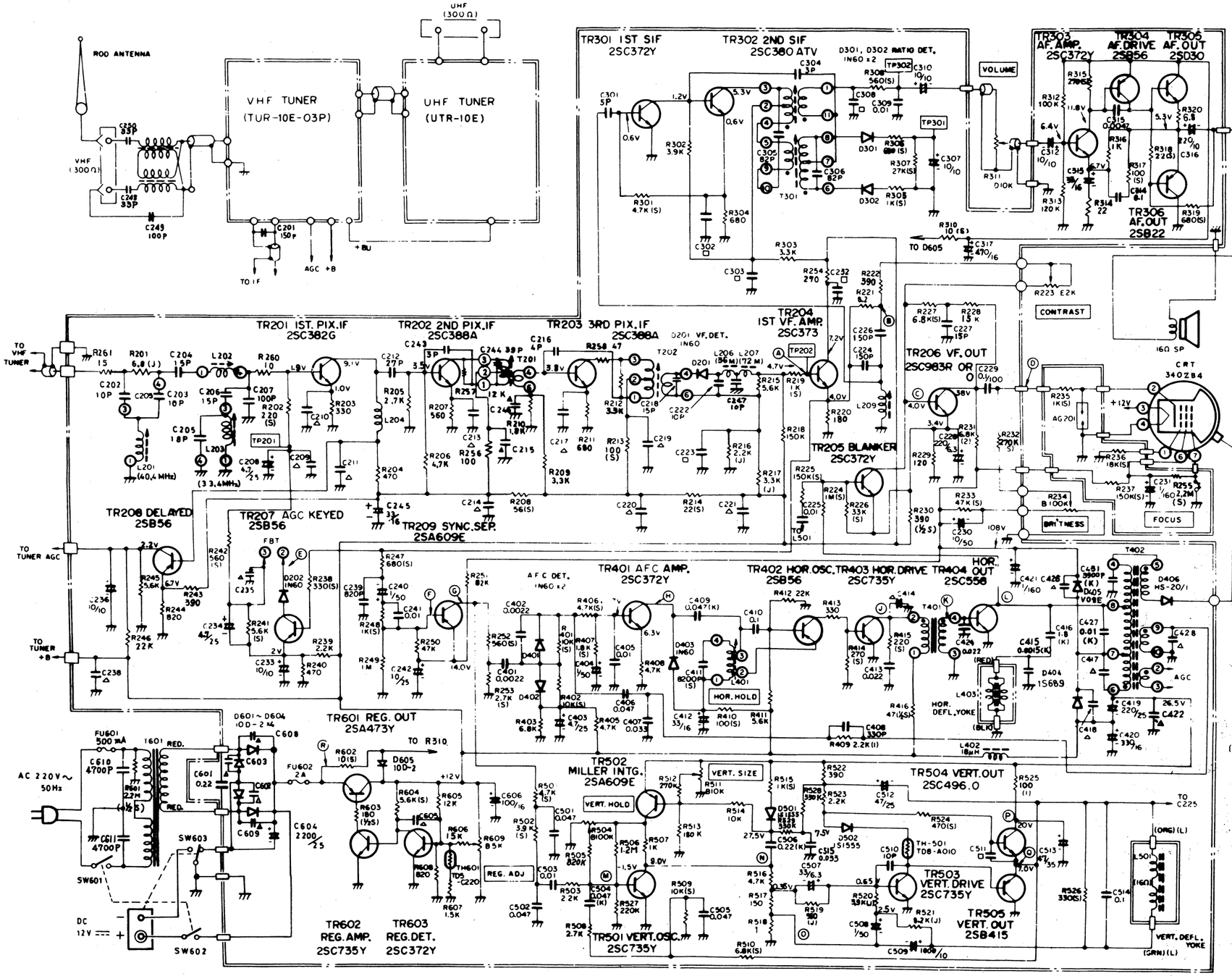


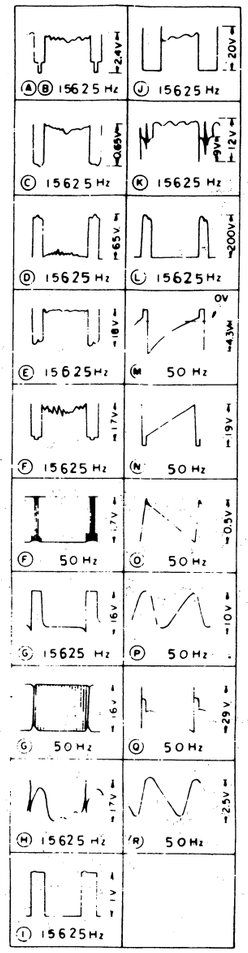
(Note)

1. All capacitance value are in μF ±20%, 50V unless otherwise indicated.
2. Tolerance of all capacitance value indicated in (k) is ±10%.
3. △ marks are 0.0015μF 500Vp and □ marks are 0.01μF 50V.
4. All resistance value are in OHM ±10% 0.25W unless otherwise indicated.
5. Tolerance of all resistance value indicated in (j) is ±5%.
6. (s) marks are composition resistance. and number of in side ( ) are indicated watts.
7. Wave forms are taken with controls set for a normal picture.
8. DC voltages are measured from point indicated to ciruit ground with high impedance V.T.V.M. under line voltage 220V no signal condition.
9. This circuit is of basic one, so might be different from the chassis wiring in accordance with improving.

CIRCUIT DIAGRAM

TK-14EU





(Note)

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2. Tolerance of all capacitance value indicated in (k) is ±10%.
3. △ marks are 0.0015μF 500V and □ marks are 0.01μF 50V.
4. All resistance value are in OHM ±10% 0.25W unless otherwise indicated.
5. Tolerance of all resistance value indicated in (j) is ±5%.
6. (s) marks are composition resistance and number of inside ( ) are indicated watts.
7. Wave forms are taken with controls set for a normal picture.
8. DC voltages are measured from point indicated to circuit ground with high impedance V.T.V.M. under line voltage 220V no signal condition.
9. This circuit is of basic one, so might be different from the chassis wiring in accordance with improving.

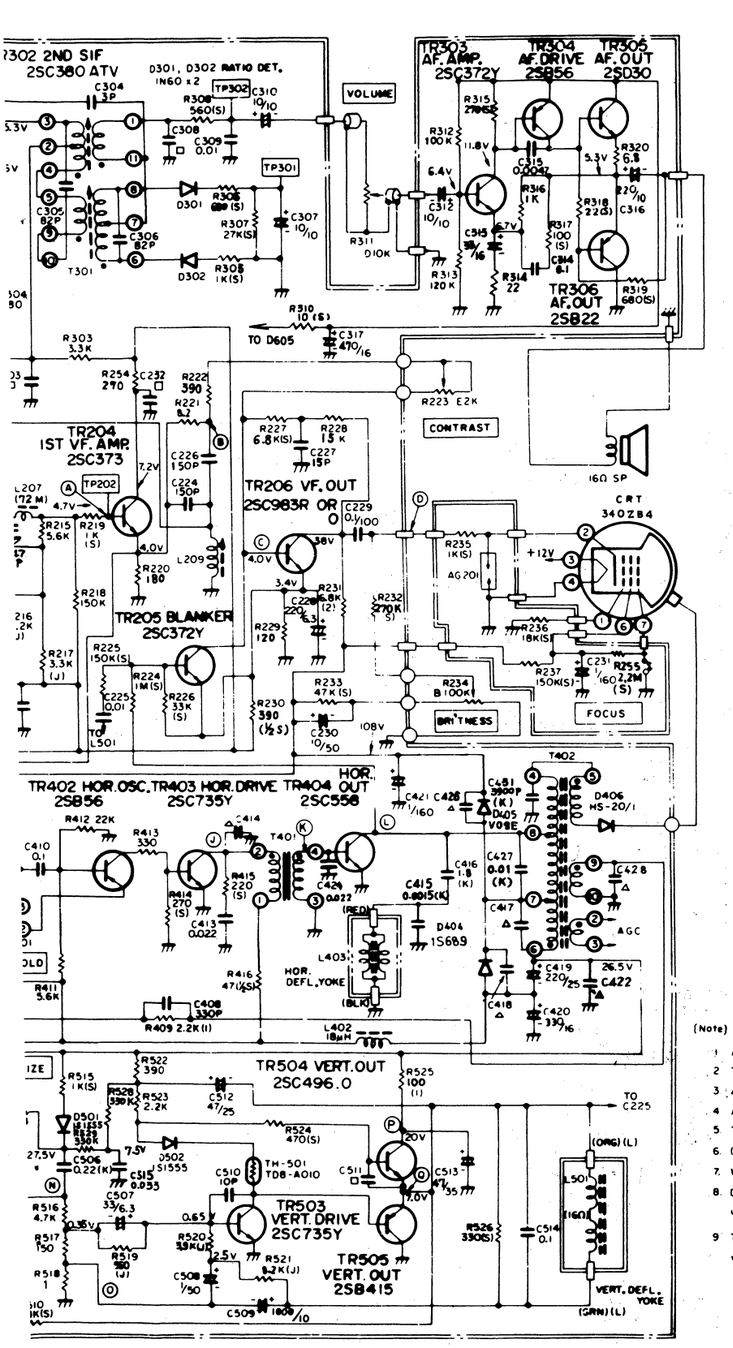
REF. NO.

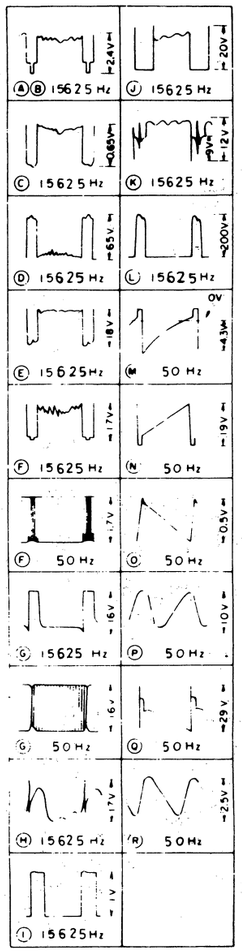
COILS & TRA

L201
L202
L203
L204
L206
L207
L209
T201
T202
T301
L401
L402
L403, 501
T401
T402
T601

SEMICONDUC

TR101
TR102
TR103
TR1
TR2
TR201
TR202, 203
TR204
TR205
TR206
TR207, 208
TR209
TR301
TR302
TR303
TR304
TR305
TR306
TR401
TR402
TR403
TR404
TR501
TR502
TR503





(Note)

1. All capacitance value are in μF ±20%, 50V unless otherwise indicated.
2. Tolerance of all capacitance value indicated in (k) is ±10%.
3. Δ marks are 0.0015μF 500V and □ marks are 0.01μF 50V.
4. All resistance value are in OHM ±10% 0.25W unless otherwise indicated.
5. Tolerance of all resistance value indicated in (J) is ±5%.
6. (s) marks ars composition resistance and number of in side ( ) are indicated watts.
7. Wave forms are taken with controls set for a normal picture.
8. DC voltages are measured from point indicated to circuit ground with high impedance V.T.V.M, under line voltage 220V no signal condition.
9. This circuit is of basic one, so might be different from the chassis wiring in accordance with improving.

MAIN PARTS LIST

REF. NO.	DESCRIPTION	PART NO.
COILS & TRANSFORMERS (Model TW-12EU, TK-14EU)		
L201	Coil, Picture IF, Trap-G (40.4 MHz)	T15868
L202	Coil; Picture IF, Trap-I (35 MHz)	T15870
L203	Coil; Picture IF, Trap-H (33.4 MHz)	T15869
L204	Inductor B (fixed)	T14181
L206	Coil; IF Filter (36 MHz)	G14021
L207	Coil; IF Filter (72 MHz)	G14022
L209	Coil; Sound Trap-AE (5.5 MHz)	T15820
T201	Transformer; Picture IF	T15867
T202	Transformer; Picture IF	T15871
T301	Transformer; Ratio Detector-M (5.5 MHz)	T15316
L401	Coil; Horizontal Oscillator	G12065
L402	Coil; Horizontal Filter Choke	T14175
L403, 501	Coil; Deflection Yoke	T13071
T401	Transformer; Horizontal Drive	T12302
T402	Transformer; Fly-Back	T12108
T601	Transformer; Power	G11181
SEMICONDUCTORS & PICTURE TUBE (Model TW-12EU, TK-14EU)		
TR101	2SC606 Transistor	
TR102	2SC605 Transistor	
TR103	2SC287A Transistor	
TR1	2SC1070 Transistor	
TR2	2SC684 or A1E or 2SC387 Transistor	
TR201	2SC382G Transistor	
TR202, 203	2SC388A Transistor	
TR204	2SC373 Transistor	
TR205	2SC372Y Transistor	
TR206	2SC983R or O Transistor	
TR207, 208	2SB56 Transistor	
TR209	2SA609E Transistor	
TR301	2SC372Y Transistor	
TR302	2SC380ATV Transistor	
TR303	2SC372Y Transistor	
TR304	2SB56 Transistor	
TR305	2SD30 O or B or Y Transistor	
TR306	2SB22 O or B or Y Transistor	
TR401	2SC372Y Transistor	
TR402	2SB56 Transistor	
TR403	2SC735Y Transistor	
TR404	2SC558 Transistor	
TR501	2SC735Y Transistor	
TR502	2SA609E Transistor	
TR503	2SC735Y Transistor	

REF. NO.	DESCRIPTION	PART NO.
TR504	2SC496O Transistor	
TR505*	2SB415 (General) Transistor	
TR601	2SA473Y or O Transistor	
TR602	2SC735Y Transistor	
TR603	2SC372Y Transistor	
D201, 202, 301, 302 401, 402, 403	1N60 Diode	
D404	1S689 Diode	
D405	V09E Diode	
D406	HS-20/1 H.V. Rectifier	
D501, 502	1S1555 Diode	
D601, 602, 603, 604	10D-2 Rectifier	
D605	10D-2 Separator	
D1	1N82G or 1S750 or SD82A Diode	
TH501	TD8-A010 Thermistor	
TH601	TD5-C220	
CRT	340ZB4 14″ 90° (TK-14EU)	
	310EUB4 12″ 90° (TW-12EU)	

CABINET ASSEMBLY (WHITE CABINET) [ ] ------- TW-12EU

* Bezel; TKBS [TWBS]	T811392A	[T811443C]
* Decoration Board; TK (Part of Bezel) [TWU]	T811394	[T811446]
Badge; TKBS [TWBS]	T633535A	[T633535]
* Decoration Board; TKBS (Part of Volume) [TWBS]	T633527	[T633534]
Sun-Shield; TK [TW]	T811395	[T811445]
PCB Frame; TK1 [TW-1]	T811397	[T811447]
PCB Frame; TK2 [TW-2]	T811398	[T811448]
Knob C357 (For VHF Channel Select) [C377]	T87556	[T87566A]
Knob F210 (For VHF Fine Tuning) [F212]	T87558	[T87565]
Knob C358 (For UHF Channel Select) [C363]	T87557	[T87564]
Knob TK (For UHF Channel Indicating Hand) [TWBS]	T811400	[T811451A]
Knob E333 (For Main Switch & Volume Control) [E342]	T87559	[T87567A]
Knob S4 (For Brightness & Contrast Control) [S9]	T87560	[T87560A]
* Back Cover; TKBS [TWBS]	T811393A	[T811444A]
Caution Plate; TWBS (For No user Serviceable) [TWBS]	T811489	[T811489]
Name Plate; TKEU [TWEU]	T633660	[T633563]
Rod Antenna; PF	T18023S	[T18023]
Rod Antenna Holder; TW [TW(W)]	T811019F	[T811019F]
UHF Loop Antenna; PFAUB	T18028	
* Handle; TKBS [TW(W)]	T811396A	[T811450A]
Hole Protector for Supply Cord Hanger; TK [TW(W)]	T853161	[TT82555A]
Hole Protector for Volume; TW(W)	T811406C	
Antenna Terminal; TK-EU (Completed with Antenna Terminal Mounting; C) [TWEU]	T811528	[T811487]
Oval Speaker; N2H8-O (16 ohm) [EP100715Q(16 ohm)]	T45008	[T45024]
Hole Protector for Supply Cord; TKEU [TWEU]	T82538A	[T82556A]
Mounting Bracket; TK1 (For Back Cover) [TW]	T633314	[T633418]
Mounting Bracket; TK2 (For Back Cover) (TK-14EU Only)	T633315	

REF. NO.	DESCRIPTION	PART NO.
	Mounting Bracket; TK (For Rod Antenna) [TW]	T633319 [T633419]
	Mounting Bracket; TK (For Speaker) (TK-14EU Only)	T853142
	Aluminium-Leaf; TKEU (For Shielding) [TWEU]	T853518 [T853404]
	DC Connector; (For DC Operate)	G43161

PACKING MATERIALS

*	Packing Case; TKEU [TWEU]	T853163B [T853402]
	Inner Packing; TK1 [TW]	T811401 [T811452]
	Inner Packing; TK2 (TK-14EU Only)	T811409
	Sheet for Set Protection; TK	T82542
	Set Cover; TK	T82543

CHASSIS MECHANICAL PARTS

	Mounting Bracket; TK for P.C.B.	T811399
	Mounting Bracket; TK-EU for Tuner [TW-2]	T633696 [T633561]
	Mounting Bracket; TK for Antenna Terminal [TW]	T633323 [T633430]
	Mounting Bracket; TK for Power Transf. [TW]	T633324 [T633249]
	Mounting Bracket; TK for Controls [TW-2]	T633325 [T633472]
	Heat-Sink; TK-1 for TR601	T633327
	Heat-Sink; TK-2 for TR504	T633328
	Heat-Sink; TK-3 for TR505	T633329
	Radiator Holder; TW-1 for TR601	T633440
	Radiator Holder; TW-2 for TR505	T633441
	Shielding Case; 402A (Parts Side)	T632725
	Shielding Case; TK (Pattern Side)	T633415
	Shielding Case; TK-EU-1 (F.B.T. Side and Parts Side) [TW-EU-1]	T633699 [T633591]
	Shielding Case; TK-EU-2 (F.B.T. Side and Pattern Side)	T633700
	Spring; TA for Ground of Aluminium-Leaf	T70160

ELECTRICAL COMPONENTS

VHF Tuner (TUR-10E-03P)	T55015
UHF Tuner (UTR-10E)	T55110
4P Socket for P.C.B.	G43285
4P Plug for P.C.B.	G43552
Connector Socket; B for DC Operate	G43257
Fuse; 0.5 A 125 V	G41023
Fuse; 2 A 125 V	G41037
1P Fuse Holder; AD	G43330
M type CRT Socket; K	G43866
Anode Cap; L	G43634
Insulating Cap; E for H.V. Rectifier	G83025
Feeder; B	G44136
Lead Clamper J (Nylon 66)	G81246
Cord Stopper; A	G81142
2P Terminal Board; GS	G43786
3P Terminal Board; GS	G43787

REF. NO.	DESCRIPTION	PART NO.

*** REMARK (ORANGE CABINET)**

Bezel	T811392B [T811443E]
Decoration Board (Part for Bezel)	T811394 [T811446]
Decoration Board (Part for Volume)	T633527A [T633534A]
Back Cover	T811393B [T811444]
Handle	T811396B [T811450]
Packing Case	T8531630 [T853402A]

X-RAY PRECAUTIONS FOR SERVICEMEN

1. For replacement purposes, use only the type of picture tubes shown in the parts list.
2. For replacement purposes, parts which are influenced upon X-Ray Radiation in horizontal Deflection, High Voltage Circuits etc., use only types shown in the parts list.